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Cuyuni. As far as I can foresee, three or four weeks may elapse before the expedition can return, for refitting, to George Town. The map will point out more clearly the route which we have taken; though I cannot omit to observe that more unfavourable weather for astronomical observations we could not have had than we have experienced during this expedition.

IV.—*Excursion up the Barima and Cuyuni Rivers, in British Guiana, in 1841.* By the Chevalier R. H. SCHOMBURGK. Communicated by the Colonial Office.

Demerara, August, 1841.

THE party under my command left Cumaka, where we had sojourned for some time, on the 15th June, and having arrived at the junction of the Aruka with the Barima, we continued the ascent of the latter river in an east-south-eastern direction: we reached, next day, its junction with the Kaituma, which falls in on the left bank from the S.; and is at its mouth about 200 feet wide. The Kaituma is inhabited by Warran and Waika Indians; and is connected with the upper Barima by several intermediate brooks.

Numerous rivulets join the Barima on both its banks; some of them inhabited by Warrans. It has still, however, the appearance of a tidal river, being margined by mangrove and curida bushes, over which manicole and truli palms raise their heads. Its banks form continued swamps, which only can be made arable through the industry of man.

We encamped in the night between the 15th and 16th of June at a Warran settlement, the chieftain of which called himself Marawari. The noise of the Indian drum and songs, on our approach, announced that the inhabitants were revelling; and on landing we had sufficient evidence that Marawari was intoxicated. One of his wives was in the same state; and thus we witnessed, for the first time since we had left the European settlements, the effects of that horrible vice, drunkenness. Marawari's settlement consisted of five huts, surrounded by rich provision-grounds; and I observed with pleasure some lemon and lime trees near the houses. Their provision-fields abounded in cashew-nuts (*Anacardium occidentale*).

We passed, on the following day, the small river Maruiwa, or Whomana, which, by the interlacing of a number of other rivulets, affords a passage in boats from the Barima to the Waini, a journey which the Indians effect generally in two days. At a short distance

above the junction some hillocks rise on both banks; they are the first which are met with on the Barima. The Warran chieftain Clementi had selected one of them to build on its summit a large hut, which, by its construction and neatness, distinguished itself from the generality of Indian houses. The erection of this house, with its gallery in imitation of a second story, was the more gratifying, as he did it to afford accommodation to the superintendent of the district on his periodical visits; the good effects of which, as exhibited in the character and better conduct of the Indians in their social intercourse, I had several times opportunity to witness.

I availed myself here of a favourable moment to determine the position of the place; an opportunity which the unfavourable weather had not previously afforded us since we left Cumaka. Warina is, according to my observations, in latitude $7^{\circ} 50' 15''$ N., and longitude $59^{\circ} 43' 30''$ W.: and the height of the house we had selected for our night-quarters was about 70 feet above the Barima. The chain of hillocks, on one of which the house was built, extends, in longitudinal ridges, in a N. and S. direction, N. 12° E. and S. 12° W.

I always considered it my duty, wherever an opportunity offered, to observe how far the geological structure of the country might be favourable to cultivation; it being undeniable that the quality of the soil depends generally upon the rocks which form the strata below the arable land. The super-strata at the hills of Warina consist of ochreous clay, intermixed with mould, pebbles, and that due proportion of sand which would particularly qualify it for the cultivation of coffee. The large blocks of ferruginous clay which lie dispersed on the surface ensure the necessary moisture for the cultivation of that plant; for it is well known to the agriculturists how beneficially such blocks operate on the soil on which they lie, contributing not only to the retention of moisture, which would otherwise evaporate, but to the precipitation of atmospheric vapours.

The rivulet Curiye offers another medium of communication with the Maruiwa and the Waini, but it can only be navigated in small boats.

We passed, at 9 o'clock on the 18th of June, the river Amissi, which joins the Barima on its left bank. It is of considerable size; and at the junction of the two rivers, the Amissi appears the larger of the two. The Indians, however, informed me that its course has not the length of the Barima, and that its banks are mostly swampy: the current appears insignificant.

During the rainy season the influence of the tide is felt to this point; in the summer months it is felt still higher up. The swampy banks of the Amissi are unfit for habitation. Even the

Warrans, whom the earlier authors of travels described as living on the tops of trees, but who in reality raised only a platform just above the level of the water, and rested their miserable dwellings on stumps of ita-trees, prefer now higher ground to build their huts upon. The Amissi affords, by natural canals, a communication with the river Kaituma.

Since we had left Warina, our course up the Barima lay more to the S.W. : the banks of the rivers became higher ; while the palms and mangrove bushes, which till now had been so numerous, became less frequent, and were replaced by a more varied vegetation. Our Indian guides informed us that, by ascending the rivulet Yarumuku half a day, we would reach high hills and savannahs. We continued, however, the ascent of the Barima, and passed the rivulets Aruta and Pegua ; the latter inhabited by Warrans. The Barima narrows above this creek to 40 yards, and flows with a strong current, which impeded our progress : its depth was still from 3 to 4 fathoms. The banks (it being now the middle of the rainy season) were full to overflowing, and rose scarcely a foot above the water's edge.

In lieu of palms, the most stately mora-trees overshadowed the river. In all my former travels in Guiana I have nowhere seen trees of this description so gigantic as on the land adjoining the Barima at its upper course. Indeed, frequently, when our boat rounded some point which the river made in its course, and a long reach was before us, these majestic trees appeared in the background as hillocks clothed with vegetation, until a nearer approach showed our mistake ; and we found that what we considered to have been a hillock was a single tree, rising to the enormous height of 130 to 150 feet ; forming by itself, as it were, a forest of vegetation. The importance of the mora in naval architecture is now fully recognised in Great Britain, and a new export trade has been opened to the colony. On the upper Barima this tree is so abundant, and grows to such a size, that the whole British navy might be reconstructed merely from the trees which line its banks ; a circumstance well worth consideration, for the river being navigable to vessels of 12 feet draught, the craft intended for the transport of the timber might load at the very spot where the trees are cut down. It is only lately that the timber of Guiana has come into notice in England ; but so superior is the mora and the green-heart for objects of naval architecture, that a higher price is given for them in sea-port towns than for any other wood imported into England.

It appears that, at the commencement of this century, a white man, very likely a Dutch settler, had advanced so far as the Huena river. The Indians showed us the place where he had cultivated sugar ; and they told us that he had possessed a

schooner and several punts, with which he carried on a timber trade. The Indian, in his expressive language, called the former settlement "the last place of the white man."

We entered, on the 19th of June, the Caruwava or Caruawa river, a tributary of the Barima, and halted at a settlement of Warran Indians. While among the Warrans I had heard much of one of their games which they exhibit on festival occasions, and here I had the satisfaction of witnessing it. It is played in parties, two against two, and the champions, painted and dressed in the distinguishing modes of their tribes, show their athletic skill by attempting to push each other from a space of ground by means of the *haha*, which resembles a shield. It appeared to us an innocent pastime, which gave agility to their limbs, and displayed to the greatest advantage their muscular power and fine proportions. There are several Warran settlements on the banks of the Caruwava: I estimate their number at 200 individuals.

The Manari, a river with a stronger current than the Caruwava, joins the latter on its left bank, at the distance of about a mile from its confluence with the Barima. The Manari is mostly inhabited by Warrans; but there is a settlement of Waikas about 5 miles up, where we intended to stay for a few days. From this settlement a path led overland to the river Barama, and thence to the Cuyuni; and it consequently became necessary to select it as a starting-point. Our larger canoes, being much too bulky, were now of no further use; and as the official duties of Mr. King, the superintendent of the country, required his speedy return to George Town, I resolved on sending the two canoes, with such of the crew as I considered not qualified for the fatigues of an overland journey, under his command to the coast. We landed at the settlement Manari in the afternoon; it consisted of five Indian houses, the largest of which was given up to us to reside in.

I have already alluded to the sluttishness both of the persons and dwellings of the Warrans; and mentioned how superior the Arawaak Indians were in that respect. The Waikas are perhaps even superior to the Arawaaks; the cleanliness of their person and domestic arrangements was a gratifying picture, after having travelled for months among the Warrans. The Waikas are much fairer in their complexions than the Indians who inhabit the coast regions; whom they also surpass in athletic form and regularity of features. The Warrans indulge in bigamy; I met even several instances of polygamy among that tribe. It is different with the Waikas, whom I found uniformly united to only one wife.

The land adjoining Manari is wonderfully productive. We saw sugar-canes vying with the best on the coast; Indian corn, or maize, far surpassing any ever produced at the coast regions; and

bunches of bananas weighing from 80 to 100 pounds. The superstratum is a rich loam, intermixed with vegetable earth and sand; and, as it lies upon clay, sufficient moisture is always retained to advance vegetation.

Mr. King, and those of the party who were to return with him, left Manari on the 22nd of June. The provisions were at that time much reduced, and the period of the year did not warrant me in supposing that I would be able to get much from the Indians. I desired, therefore, that the boat of the expedition should proceed up the Essequibo, and await the land party at Bartika point, from whence a supply of the most necessary provisions should be sent up the Cuyuni, in a smaller corial, to meet us. This service was confided to the second coxswain, Claas van Cornelinsen.

I was anxious to examine the Barima beyond its falls. I started accordingly, on the 24th of June, in a small canoe, accompanied by Mr. Glascott, the assistant-surveyor, and Mr. Echlin, the artist of the expedition. Descending the Manari for a short distance, we reached the Barima by two of those natural canals (the Gaima and Ataima) which so frequently connect rivers having a parallel course in these swampy regions. The almost continual torrents of rain had caused the Barima to overflow its banks, and we found the current running at the rate of from four to four and a half miles an hour. Our progress was consequently slow. A short distance above the off-flow which connects the Barima and Manari, we visited a Warran settlement called Emu, where we admired a gigantic bamboo, several hundred yards in circumference.

We found two of the Indians finishing a native canoe, which they had cut out of cedar (*Icica altissima*), a species of wood uncommonly well qualified for that purpose, and resembling, in its durability, odour, and reddish colour, the famed Bermuda cedar, although a genus quite distinct from the icica. As the cedar-tree of Guiana is by no means scarce, it deserves more attention.

The Warrans are famed for their skill in finishing canoes out of the single trunk of a tree. They formerly furnished the colonists, as well as the tribe of Indians inhabiting the coast regions, with canoes and corials, which for durability and speed far surpassed any boats ever introduced from Europe. Of late years their industry has much relaxed. The celebrated Spanish *launches*, employed during the revolutionary war of Venezuela, were made by the Warrans. Some of these were roomy enough to contain from fifty to seventy people.

We passed the small rivers Ararisi, Yabritin, Burroparu, Maria-waballi, and landed, on the evening of the 25th of June, at the

Warran village, Simuita. We here measured the breadth of the river, and found it 51 yards. The river Kaituma flows, about 9 miles distant, in a N.E. direction. The barometer stood, at 6 hours A.M., $30^{\circ} 0' 20''$ English inches; the thermometer at $70^{\circ} 5'$ Farenheit.

We were accompanied by a number of Indians from Simuita and the neighbouring settlements, who intended to ascend the river to the falls, to shoot the delicious fish called maracotto, or ossibu, which, at the time these waters are full, migrate beyond the falls for the purpose of depositing their spawn. We formed a flotilla of boats, our canoe being the leading frigate. Several fish were procured on the first day. In order to attract them to the shore, a number of the seeds of the carapa, or crab-nut, are pounded, and having been enclosed in a netting of withes, they are put in the water, and soon attract the greedy maracotto. An Indian stands ready with a light spear, which he lances into them, one after another, with unerring aim. The maracotto frequently attains a length of 30 inches, and is 26 inches in girth. Its flavour is delicious.

We observed, on the 27th of June, a tract of sandstone, which was heaped up in numerous blocks. It is fine-grained, and much used by the boat-building Warrans to sharpen their tools.

We arrived in the afternoon at the fall Mekorerussu, which presents the first impediment to the navigation of larger vessels on the river. A few miles below the falls we found a depth of 3 fathoms. The Barima is therefore navigable so far for steamers of considerable size, although for sailing vessels the voyage would be tedious, in consequence of the serpentine course and strong contrary current.

The Indians inhabiting these regions were not aware that white men had ever penetrated so far before. We might have commenced our return here, more particularly as the weather was so unfavourable, but I found the course of the Barima so different from what it is laid down on the maps, that I considered it of consequence to trace it higher up. The rainy season rendered the Barima navigable for a greater distance in the direction of its source than would have been the case at any other time, and I therefore resolved to continue until we could proceed no further in our corial.

The first series of falls were ascended without any accident, and we halted the same evening near some temporary huts, which certain Waikas from Manari had erected opposite to a place where they intended to found a new settlement. Although months had doubtless elapsed since any human beings had sojourned in these huts, we found them swarming with fleas and chigoes, which made us soon relinquish the idea of using them for our night's quarters.

We passed, in the course of the next day (June 28th), numerous rapids, of which one called Uropocari was the largest. The river was undiminished in breadth, but studded with rocks. We passed in the afternoon a large rivulet with black water, called Duquari. It comes from the W.N.W. I afterwards observed stratified quartz, and could not but admire some huge blocks of granite which rose above the level of the river, and are called by the Indians Arauta. Their shining surface and symmetrical form were equally remarkable.

The river Wanama—so named from a species of bamboo which grows at its mouth, and which the Warrans call Wanama—joins on the left bank, and is one of the largest tributaries of the upper Barima.

About half a mile farther S.W., the river Mehokawaina unites with the Barima. Both tributary and recipient are, before their junction, of the same breadth. The Mehokawaina comes from the S.W., and the Barima proper from the W.

I now found it advisable to discontinue the ascent in corials, for numerous trees which had fallen across the Barima obstructed the boats. Leaving Mr. Glascott in charge of the camp formed at the junction of the two rivers, and having armed the most effective of the crew with cutlasses and axes, we cut our way through entangled bushes and swamps, following the left bank of the Barima. With the exception of two rivulets, we found the tributaries which the river received of inconsiderable size. Its bed is frequently traversed by granitic dikes, over which the water precipitated itself impetuously; and its current was so rapid that it would have been difficult to make any way in ascending, even in a small corial.

I admired the number of noble forest-trees, among which I observed the bullet-tree, the locust-tree, the crab-wood, curahara, itapu, cuyama, yarura, and its allied species, parnacussana; the suari or impa, and makaratalli. But the most remarkable appeared to me the tunkara, which measured in circumference from 28 to 30 feet. Its trunk rose free from branches, smooth and round, to about 70 or 80 feet; and I was told by some of my Indian guides that the Warrans used the tree for making canoes. It is soft and white, and the colonists prepare staves from it. The Warrans make their bark or shell canoes of the bark of the bullet-tree and makaratalli.

Incessant rains rendered our travelling through the woods and over swampy ground by no means comfortable. We continued our march next morning (the 1st of July), and passed a large rivulet, which, having no native name (for the Indians of the inhabitable part of the Barima, below its falls, never ascended so far), was called Rocky River, from the numerous blocks by which its course was obstructed.

Our stock of provisions being now completely exhausted, we stopped here. I halted at eleven o'clock, and returned to the spot where we had encamped the previous night, under severe rain and thunder. The river was about 30 feet wide where we turned back: its course was W.N.W., and frequently obstructed by rapids and falls. The adjoining land on either side was fertile, consisting of clay mixed with sand and vegetable earth. The forest scenery was luxuriant, and hillocks of inconsiderable height, perhaps not more than from 50 to 60 feet above the Barima, appeared particularly adapted for the cultivation of coffee and cocoa. We reached the camp at the junction of the two rivers next day. Mr. Glascott during my absence had only succeeded in his meteorological observations; the unfavourable weather having prevented him determining the geographical position of the camp astronomically.

	Barometer in Inches.	Thermometer.		
		Attached.	Detached.	Wet.
Highest . . .	30·088	80 5	80 0	78 5
Lowest . . .	29·942	71 4	71 0	70 0
Mean of 37 Observations, from 6 A.M. to 6 P.M.	30·007	75 56	75 30	74 02

Having once more reached the corials, we floated down the river. Our return was rapid: it had taken us six days to ascend from Manari to the Mehokawaina, and we accomplished our return in $2\frac{1}{2}$ days.

Our departure from Manari was retarded by the sickness of the first coxswain, Peterson, who was so seriously indisposed that Mr. Echlin, our artist and physician, reported him unable to journey with us overland.

From the information I had collected, the road threatened to be of the most fatiguing description. And as I was anxious that the chronometers, of which two had hitherto kept a fair rate, should reach the coast regions in safety, in order to prove by re-measurement to George Town how far the observations taken by their means were to be trusted, I desired Mr. Glascott, the assistant-surveyor, to proceed with the coxswain by water to the coast, while Mr. Echlin, and the men best fitted for such an undertaking, accompanied me overland to the river Cuyuni. I had

another object in view in sending Mr. Glascott by the route alluded to ; for should the weather prove favourable, he might be able to determine by astronomical observations some of the more important points on the coast.

According to our observations the settlement Manari is on $7^{\circ} 35' 34''$ N. lat., and $60^{\circ} 0' 36''$ W. long., or 109 miles W. of George Town.

The extract of our meteorological observations gave us the following result :—

	Barometer in Inches.	Thermometer.					
		Attached.		Detached.		Wet.	
		°	'	°	'	°	'
Highest . . .	30·176	89	0	88	8	83	4
Lowest . . .	30·018	72	2	71	5	68	0
Mean of 37 Observations, taken hourly . . .	30·092	78	5	78	0	75	2

We were joined by a number of Warrans and several Waikas from Manari, whose services we had engaged to assist in carrying our luggage from Manari to the Barama, which flows into the Waini. We were told that we would have to ascend the Barama in boats for four days before we should reach the path that leads to the Cuyuni.

An Indian carries scarcely more than 24 lbs. weight on journeys overland. While the negro carries invariably his burthen on his head, experience has taught the Indian that by doing so he would not be able to make much progress through the thick woods, and his load is therefore slung on his back ; for that purpose they have baskets which are made of the stems of a calathia, or of some species of palm.

Our preparations had been completed, the loads distributed according to the appearance of strength possessed by our carriers ; and after Mr. Glascott had left with his party, in a boat which was hired for the purpose, we commenced our march overland on the 8th of July. The forest through which we now proceeded appeared to have less underwood ; and I observed numerous specimens of that valuable tree the siruaballia, which affords one of the best timbers for the planking of vessels and the construction of gigs, boats, &c. I saw trees of this description of which the trunks might have measured 70 feet before they branched off.

The cedar and other forest trees, many of them of the most gigantic dimensions, were seen in great numbers during the course of this day's journey, besides numerous hya-hya trees. The hya-hya is the remarkable tree which yields by incision a milky fluid that forms a good substitute for cow's milk. The Indian, to whom it is inexplicable how man can make use of milk after having been weaned from the maternal breast, does not attach any value to this fluid as an article of food, but the younger community prepare from it balls of caoutchouc.

Our path led over hillocks from 50 to 60 feet high, extending in longitudinal ridges: their intermediate valleys generally formed swamps; on crossing which we frequently sunk to our girths in mud and water. After 4 hours' march we crossed the Caruawa, here a mere rivulet; and arrived in the afternoon at a small settlement consisting of two houses inhabited by Waikas.

In the morning I had the mortification to find that the mountain-barometer which I had brought with me had suffered materially from the land journey, and was for the present unfit for use. After a march of 2 hours we halted at Paripu, a settlement likewise inhabited by Waikas. The cassada grounds around the settlement were extensive, and the size of the plantains and of the Indian corn or maize struck me with astonishment. Some of the ears of the latter were 12 to 13 inches in length; those which grew on the coast regions do not exceed 5 inches. The soil is here a rich black mould mixed with white sand, and would produce anything. To prove the importance of the maize, I would only observe, by the way, that the cereal grain imported from the United States of North America into the British West Indian colonies amounted in the year 1836 to 126,680 bushels, the corn meal to 36,168 barrels; and that the value of both was 61,341*l.* sterling.

The neatness and order of the provision-fields around these settlements showed that the Indian who presided over them was distinguished from the generality of his brethren. Paths led through the fields; the yams were trailed against poles; lime and orange trees, so seldom to be met with amongst the Indians, increased the favourable idea I had of the inhabitants. We found only one Indian and some females at home; the rest, with their chieftain, were gone to work for a time at a wood-cutting establishment on the river Pomeroon with a view to earn money to procure those articles which have become almost necessities of life with them, namely, wearing apparel, implements for cultivating their fields, guns, powder, and shot.

Leaving Paripu we continued our march; and in the afternoon of the same day arrived at another large settlement, judging at

least from the number of the huts. Here also the male inhabitants were absent, having gone to work at the Pomeroon.

While passing through the village I noticed at the further end a house which appeared to be uninhabited—two heaps of ground thrown up near the middle of the house, and one, covered with a large earthen vessel, attracted more particularly my attention. I made inquiries, and learned that they were the graves of a father and his child, both of whom had been killed by the malpractices of a piaiman or conjuror. When is the period to come at which the Christian religion shall enlighten these poor benighted beings, and prevent the recurrence of such dreadful scenes, with the effusion of blood in their train? The accusation that the victim has died through the agency of a piaiman is sufficient to awake an avenger of the deed among his relations.

After we had passed the village, we had to wade to our necks for upwards of a mile through water. The rivulet Parapimai had inundated its shores; and as the rain descended in torrents, we were glad when, towards evening, we arrived at the Caribisi settlement Cariacu, situated on the banks of the Barama, which is here about 60 yards wide. The Barama flows about 40 miles further, below, into the Waimi, and is the largest tributary of that river. It is inhabited by Waikas, Caribisi, Warrans, and a few Arawaaks, whose aggregate number I estimate at 500 individuals. The men at Cariacu, like those at the two settlements previously passed, were absent at the wood-cutting establishment on the Pomeroon, and we found only a few of the females, who, with a Carib, had been left in charge of the place.

Several of my Indian carriers and guides declined going any further. I had to replace them from among the Caribisi and Waikas of the vicinity, which occasioned a delay of two days. The weather during this period was so unfavourable, that I could not obtain astronomical observations. We had to ascend the Barama to a distance of 4 days' journey from this point, before we should strike the path which leads to the Cuyuni; and as there was only one boat to be had, which afforded place to four individuals, we had to betake ourselves to shell or bark canoes, called by the colonists of Demerara *wood-skins*, and by the Spaniards *conchas*. They are made merely of the bark of divers species of trees; that portion being stripped off, and manufactured into the boat. They are generally from 25 to 30 feet long, and when laden, seldom draw more than 3 inches of water: light, and of the most simple construction, they can be easily carried on the head, over rocks and other impediments which might obstruct the navigation. Indeed, they are the only craft with which the Indian navigates the upper parts of rivers; but they are dangerous, and

require proper management, for a false movement when sitting in one of them may cause it to sink. However, we could procure no other conveyance, and confided our persons and luggage to these frail vessels.

We departed from Cariacu on the 11th of July. The Barama resembles much the upper Barima; its banks are clothed with a similar vegetation, and it is equally serpentine in its course. I noticed a good deal of potter's clay, used by the Caribisi for the manufacture of pottery, which for its durability is highly esteemed by the colonists. This clay has a greyish colour, and is mixed with the loose materials of decomposing granite.

The rivulet Nakuwai was the largest tributary which we passed in the course of our first day's ascent; it joins the Barama on its left bank. We noticed the first rocks lying in the river's bed above the rivulet Abocotté. About a mile and a half above this, the Erawanta and Mazuwini join the Barama close to each other. During the rainy season, when the bed of the river is full, it forms numerous off-flows, which adopt a more direct course than the river itself, and join it again at some distance on. The Indians who are acquainted with these branches, navigate them, and thus shorten the ascent materially.

We passed, on the afternoon of the 13th of July, some hillocks, and, soon after, the first rapid, formed by dikes of granite; and reached a settlement of Waikas, called Cadui, which we were told was the last inhabited place below the great fall. We were here struck with an air of plenty; the cassava grounds were extensive; yams, sweet potatoes, plantains, and bananas were abundant; also the paripi palm, and papayas, of which the fruit resembled a large melon, some of them measuring 28 inches in circumference. Sugar-cane, cashew, and cotton-trees grew around the huts. A number of wild fowls was observed; moridies, powies, parrots of all plumage; several sun-birds, all tame, and associating amicably with one another.

I succeeded in procuring a set of circum-meridian altitudes; according to which the settlement was in $7^{\circ} 19'$ N. latitude. We heard quite distinctly during night the roaring of the great fall Dowocaima, which is about two miles distant, and bears S. 58° W.

Having engaged three more Indians to accompany us from Cadui to the Cuyuni, we started next morning at an early hour; and after passing some rapids, approached the great fall. We had to unload near the island Wayaruima, and carry the canoes and luggage 2 miles overland.

These cataracts surpass in grandeur the great falls of the river Demerara, to which in their structure they bear some resemblance. The whole fall on the Barama amounts to about 120 feet in a

distance of 2 miles; but, from the sinuosities of the channel, there is no one point which affords a *coup-d'œil*.

The grandest scene is offered by the three upper falls, where the river, narrowing into about 80 feet, rushes turbulently down the precipice in three jets, and forms, in the distance of about 100 yards, a fall of 35 to 40 feet perpendicular. This part is called Dowocaima, and, as we saw it at the height of the rainy season, when the river is full to overflowing, the scene is sublime indeed. The banks were bordered by a primitive forest, and foliage of every hue: among which the bright red of the young mora-leaves formed a striking object. Lianes, reaching from boughs 60 feet high down to the water's edge; a thousand creepers, so closely enveloping whole rows of trees as to give them a fanciful resemblance to old massy columns crowned with ivy; white festoons and clusters of purple and yellow salver-shaped flowers trailing from tree to tree; all combined to form a vivid picture of tropical vegetation. The uproar of the masses of water which rush over the ledges of rock, and envelop in foam the surrounding scenery, added to the characteristic features of the landscape.

The ledges of rock are composed of gneiss, their stratification being S. 33° W.; they form an impediment to all further navigation, and are such as, if a denser population should render the step necessary, could only be overcome by canals or railroads. In the absence of these, our Indians took their light bark canoes on their heads, and carried them to that part of the river where there were no serious obstacles to its further navigation.

We passed next day the rapid Massiwinidui, and several others of less consequence, and encamped in the evening at the foot of the fall Aunama, from whence the path leads to the Cuyuni. The river Aunama joins the Barama just below the fall. The latitude I determined to be 7° 14' N. At a day's journey above this fall there is a Caribisi settlement; further up the Barama is uninhabited. It is said to have its source on the same parallel of latitude with the Barima and Amacura; namely, in the extensive savannahs N. of the Ikruyéku mountains.

We commenced our over-land journey on the morning of the 16th of July, and traversing occasionally hillocks from 100 to 150 feet high, followed the valley through which the small river Aunama flows towards the Barama; we reached at noon an Indian settlement. The provision-grounds around it were in good order, but the houses were tenantless. From this point our tortuous path continued in a W.S.W. direction, still following the Aunama. After a march of 6 hours, we arrived in the afternoon at a settlement of Caribisi Indians, called from the rivulet on which it is situated Aunuma, and, according to circum-meridian observations of the $\star \alpha$ Gruis, in 7° 9' N. latitude. On the ridges which we

were this day crossing, and which generally stretched N. by W. and S. by E., I observed several tracts of granitic blocks, the direction of which was N.W. by W. The trees we met with on our journey were lofty, and there was less underwood than along the banks of the rivers. The mora, which had been so abundant, became scarcer the further we receded from the Barama, and was replaced by a great variety of timber-trees, as kakaralli, determa, limaballi, cedar, &c. We did not observe any green-heart, a wood much esteemed by shipwrights and housebuilders.

Our course on the 17th of July continued W.S.W. We crossed, at ten o'clock in the morning, the Aunama for the last time; and having passed a ridge of small hills which stretched S. by W., we stood soon after on the western branch of the rivulet Acarabisi. We had now reached the most elevated spot between the Cuyuni and Barama, and entered another system of rivers, the waters of which, instead of flowing northwards to the Waini and Barama, run to the S.; and, uniting with the Cuyuni, are conveyed to the Atlantic by the Essequibo.

From this ridge of hills the ground slopes southward to the banks of the Cuyuni; and I estimated the highest ridge which separates the two systems at 520 feet above the level of the sea. Heights which really deserve the name of mountains commence 20 miles further westward. The Aunama and Acarabisi are only divided from each other by hillocks which rise not more than from 60 to 100 feet above their level. Both rivers, if properly cleared of trees which have fallen across, would be navigable for canoes and punts; and as the portage is not more than 2 miles, these rivers present the means of connecting the Pomeroon and Morocco coast with the upper Cuyuni where the channel of that river is comparatively unobstructed. Towards evening we reached a Caribisi settlement, the latitude of which I found to be $7^{\circ} 4' N$. It consisted of six houses, and seventy inhabitants. Its height above the level of the sea was ascertained, by Wollaston's barometric thermometer, to be 510 feet.

We followed the valley of the Acarabisi, by no means a comfortable path, as at this season of the year it formed an almost continued swamp, and we fell sometimes to our girths in the mud. A rich retentive soil renders these regions peculiarly fit for the cultivation of rice. It rained almost incessantly, and we were truly rejoiced when, on the morning of the 19th of July, we arrived at the Caribisi settlement Haiowa, about 2 miles distant from the left bank of the Cuyuni. The country between the Barama and the Cuyuni is a series of narrow valleys, situated between hillocks of no great height. The principal valleys are those which are drained by the rivers Aunama and Acarabisi. The general direction of the others is at an oblique angle to these,

and they vary considerably in extent. Sometimes they are merely defiles, and the greater number of them do not expand more than about a quarter of a mile. I am fully persuaded that there can be no soil better qualified for the cultivation of coffee than what is found here. The zones of granite, sometimes in spherical blocks, and the vitrified and ferruginous masses of clay which I frequently observed traversing the mountains, are favourable to the cultivation of that plant.

The productiveness of the soil nearer to the banks of the Cuyuni is evident from the specimens of sugar-cane, cotton, and plantains, which were brought to me while at Haiowa. I saw a cane measuring 15 feet long, and $7\frac{1}{2}$ inches in circumference. The cotton, too, was of excellent quality and staple; and the few tobacco-plants which the Indians raised for their own use were remarkable for their large leaves, and, as I was assured, for their fine flavour.

Haiowa consists of four houses, which contain thirty-five inhabitants of the Caribisi nation. The Caribisi, like the Waikas, are a superior race. They are of a fairer complexion than the Warrans and Arawaaks, and their average height is 5 feet 5 inches. The female sex vie in symmetry of form with the men. Their features are more regular than those of other Indian tribes; and a profusion of hair, the tresses of which nearly touch the ground, contribute to their good appearance. Both sexes are great smokers: even children begin at an early age to indulge in that bad custom.

We expected to meet here a party which was to have been sent with a supply of provisions up the Cuyuni, for our stores had long since been given out, and we were reduced to cassava bread and what game chance brought to our hands. We were, however, disappointed in our expectations; and, in the absence of any craft, I had to send my coxswain a journey of 2 days higher up the Cuyuni, where I was told there was a corial large enough for our use. He arrived, and, having bargained for the corial, returned, with some additional guides, on the morning of the 22nd of July. We embarked our baggage, and a few hours later began the descent of the Cuyuni.

While at Haiowa I proceeded to the mouth of the Acarabisi, which bears from the settlement N. 75° W., distant about a mile and a half. Several meridian altitudes of stars gave me as mean result for the latitude of Haiowa $6^{\circ} 56'$ N. The boiling point of the barometric thermometer was $\frac{1}{47}$ th of a degree higher than at Acarabisi, and $\frac{1}{30}$ th of a degree lower than at the mouth of the Barima, which would give the approximate height of 260 feet above the level of the sea.

I attempted to repair the barometer, and made a number of

observations while at Haiowa; but until this instrument shall have been tested in George Town, it cannot be relied on. The mountains W. of the Acarabisi rise to a considerable height, and the summits of the Ekreku are estimated at 2000 feet above the level of the Cuyuni. Catiya, or Curumu, is about 20 miles to the westward of the Acarabisi.

The Cuyuni presented, where we embarked, a magnificent sheet of water. I estimated its width at from 400 to 500 yards. Its current was rapid—perhaps $3\frac{1}{2}$ miles in an hour—and its bed full to overflowing. A small chain of hills, called Macapa, bore nearly W. They are distant about a mile.

Our progress was rapid, and in the afternoon we had safely passed the dangerous fall of Kanaima, and rested at an abandoned settlement on the river's right bank. There were some other settlements in the neighbourhood, the inhabitants of which came to visit us. We did not observe any mora-trees along the banks; they were replaced by another equally majestic tree which the Indians called Tá-au. The islands with which the river was studded were almost covered with bushes of the *Quassia-amara* or bitter ash. The stream itself continued as if cut up by a multitude of large channels, which are not seen from each other, thickly-wooded islands intervening; and no accurate idea can be formed of their total breadth: sometimes a little range of densely-wooded hillocks approached the water's edge.

We generally found that, in the morning at sunrise, a strong breeze set in against the current, and that it changed by degrees to E.S.E. or E. by S. Descending at the rate of 5 miles an hour, we passed numerous rapids; where the river was free from impediments, it was about 600 yards wide.

We passed the Otomong hills, and avoided by narrow passages between islands numerous large cataracts, which in our small canoes it would have been dangerous to attempt to descend. At the cataract of Poinka-marka, or Womuipong of the Caribisi, we had to unload and draw the canoes over a portage of about 300 yards' extent. The perpendicular fall of this cataract is not less than 30 feet, and it is generally called the *Canoe-Wrecker*, in consequence of many fatal accidents which have occurred here. We halted in the evening at six o'clock at a single hut inhabited by a Waika, his wife, child, and a dog. He shared his hut with us, although we were rather a numerous party for a single house. At a short distance hence the rivulet Arakuna enters the Cuyuni. Its banks are inhabited by a few Waikas; and a path leads from it to the river Puruni, which flows into the Mazaruni. The latitude of the hut is $6^{\circ} 46' N$.

The rapids and falls now became less frequent, and still-water commenced. The tract of granite and gniess, which causes these

impediments, extends therefore from the Arakuna hills, uninterrupted, to the small range of hillocks called Macapa. It is about 50 to 60 miles in length, and constitutes the second large series of falls. About 8 miles below Arakuna, and opposite some small hills which rise on the river's right bank, is the island Tokoro (Tokoro-Patti). A little below Tokoro-Patti, on the left bank of the Cuyuni, is the rivulet Iroma. The rivers Rupa and Appa join the Cuyuni from the N.; they were the largest tributaries we had met in the course of our descent. We reached in the afternoon the Toraparu, a rivulet from whence a much-frequented path leads in a day to the Paruni.

We had anxiously looked forward to meet the party which we expected with supplies of provisions. We heard of them to-day at a settlement opposite the Toro-hills, but only to have the disappointment of learning, that on ascending the previous day the dangerous fall Wakupang, they had lost everything, and saved only their lives and the corial. Among the luggage lost was one of the instruments, Massey's log, and a new tarpauling. Thus disappointed in our hopes of meeting comfort, we had to put up for some days longer with our scanty fare. We paid off our guides who had accompanied us from Haiowa, as, with the men who had come up from the Essequibo, our crew was sufficiently strong to reach that river.

The dangerous fall Wakupang, where our stores were lost on the preceding day, was passed without accident. This is the commencement of the second series of rapids or falls. The river is studded with islands; green-heart and purple-heart, both most valuable trees, become abundant along its banks; but the impediments which the numerous rapids throw in the way will for some time render these treasures unavailable.

We passed in the afternoon the Cutuau hills, along which a river of the same name has its course. The Cutuau offers a communication with the river Waini, and is much frequented by the Indians of both rivers; 8 miles further eastward is the rivulet Wayarimpo, whence another path leads to the Paruni. The river is here free from impediments; its breadth from 600 to 700 yards; its water clear, and of a brownish colour. The circum-meridian altitudes of three northern stars gave me $6^{\circ} 43'$ N. as the latitude of this creek. A few miles from it is the cataract Tonomo, where the post-holder resided after his station had been withdrawn from Tokoro Island.

We had commenced this morning (July 26th) the descent of the third series of falls, caused by a small range of mountains through which the river has broken itself a passage. It rained almost incessantly; and, as the wind was against us, it endangered our descent of numerous rapids, and the coxswain could scarcely

look forward. We had to unload at the cataract Aruaka-Ematuba, and to haul our corials over land.

We passed soon after the Woka or Powis mountain, which rises, on the river's right bank, to a height of 500 to 600 feet. This ridge extends W.N.W. and E.S.E., and it can be seen from the junction of the Cuyuni and Mazaruni. Little islets, consisting of heaped-up masses of rock, divide the river into numerous channels. We had to pass the fall Camaria; and as it did not afford any portage, we attempted to descend it in our own crafts. It nearly proved our destruction: as it was, the craft filled with water; and it was only the presence of mind of some of our crew to which, under the Almighty, we were indebted for our safety.

We reached on that evening Ematuba, generally called "the Great Fall," where we had to unload and haul our corials over land, and encamped at the foot of the small island whither the corials had been drawn. Continued rains precluded the possibility of any observations, and we started on the morning of July 27th, under the same unfavourable weather. An hour and a half after, we were at the foot of the last fall, called Akayu, and saw before us the junction of the three rivers, Essequibo, Mazaruni, and Cuyuni.

We were received with demonstrations of hearty joy by the remainder of our party, who had awaited us at the Protestant Mission at Bartika Grove, near the junction of the Mazaruni and Essequibo; and the missionary, the Rev. J. H. Beman, joined in their welcome.

Our party left Bartika Grove on the 28th of July in two corials, and we arrived safely in George Town on the second day ensuing, after an absence of three months and a half, during which period we had travelled upwards of 700 miles; and although that period presented but a continuation of the most unfavourable weather, we nevertheless determined *twenty-one* points astronomically, and acquired a correct knowledge of the course of the rivers Waini, Barima, Amacura, Barama, and Cuyuni, all of which had never been visited before by any person competent to delineate them in a map; no wonder therefore that their actual course should be almost opposite to what it is represented in extant maps.

The fertility of the tract we have explored has been pointed out in various places in this as well as my former account. The lands adjacent to the rivers Amacura, Barima, and Barama, and beyond the reach of the tides, are superior in quality to those of any other district hitherto visited; and this refers equally to the Cuyuni, where I met sugar-canes of the finest description, and native cottons of superior staple and quality. But the obstacles

which impede the navigation of the Cuyuni will, I fear, prove a great obstacle in the way of rendering the fertility of its banks available. The Amacura, Barima, and Waini are for a great distance free from such impediments; and a denser population only is wanted to render this part of Guiana one of the most productive throughout its whole extent; and to this end the numerous natural canals and connexions between its chief rivers would materially contribute.

These tracts are at present inhabited by the following tribes:—
1. Warrans, along the coast, from Pomeroon to the Amacura; 2. Arawaaks, intermixed with the former, chiefly at the rivers Waini, Barima, and Amacura; 3. Waikas and Chaymas, sister tribes of the Wacawais, at the upper course of these rivers, and the regions between the Barama and Cuyuni. I estimate the whole number of these nations at 2500. Many of them assist in felling timber or in working on the estates; and if the system which only of late years has been followed, namely, that of treating the Indian as a rational being, in giving him a fair remuneration for his work, shall be generally adopted, the aborigines, there is no doubt, will prove most useful labourers to the colony. It is my full persuasion that if the attention and paternal provisions which the aborigines of Guiana have of late years enjoyed at the hands of Her Majesty's Government be continued, and means adopted to afford them religious instruction, a relic of the once numerous Indian population may yet be rescued.

V.—*Cape Palmas and the Mena, or Kroomen*. Communicated
by Dr. FRANCIS BACON.

THE region around Cape Palmas, comprising parts of the Grain and Ivory Coasts of West Africa—extending, along the coast, from Little Kroo (about 100 miles N.W. of Cape Palmas) to Tahou (about 100 miles E. of Cape Palmas), and averaging probably 100 miles in breadth towards the interior—is, not only in climate, soil, and productions, but in geological, and geographical, and ethnographical characteristics, *one country*. Its general position is remarkable and interesting, occupying as it does the grand salient angle of the western shore of the continent, which here changes its general direction from N. and S. to E. and W.; Cape Palmas itself being the actual turning point, as it is the centre of that sector of a circle which very nearly encloses the region under consideration. This point is also the *centre* of the subject in another sense; for, residing there at different periods in the course